NORTHERN ONTARIO

Land of Buried Treasure

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REGIONAL STUDIES OF CANADA

NORTHERN ONTARIO

Land of Buried Treasure

Doreen Margaret Tomkins

with George S. Tomkins

and Neville V. Scarfe

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NORTHERN ONTARIO

Land of Buried Treasure

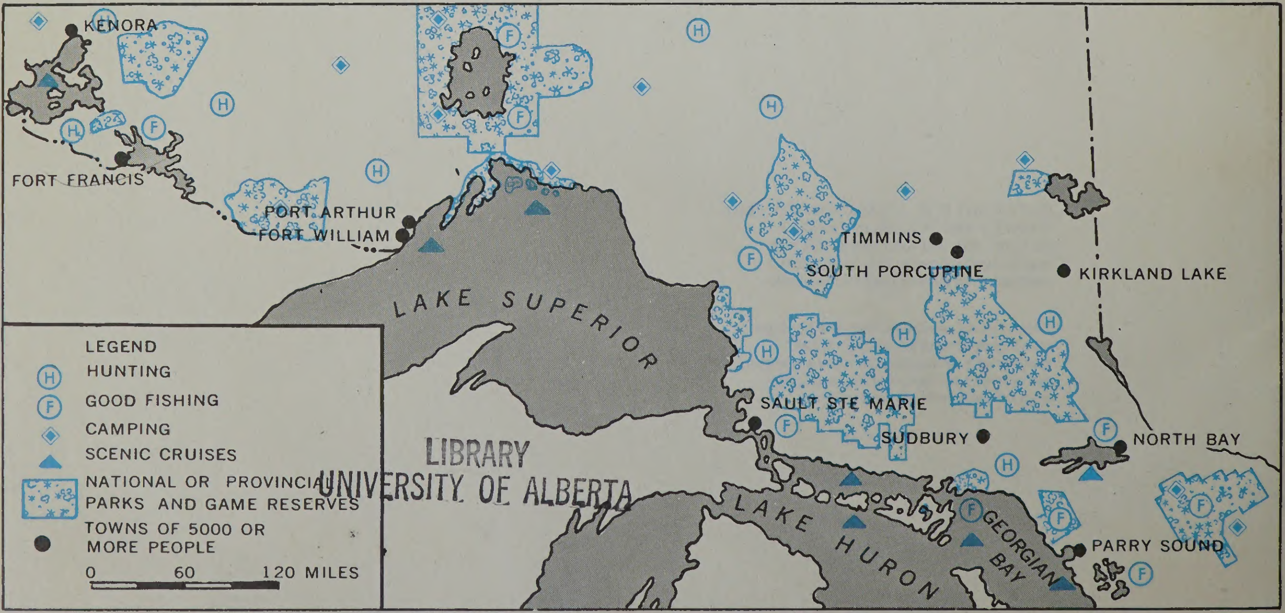
Imagine that you are planning a vacation in Northern Ontario. Look at the map in Figure 3-1. What forms of recreation are available? Figures 3-2, 3-3, and 3-4 suggest some of the reasons why this is a fine place to spend a holiday.

"Kenora — over 14,600 islands, 15,000 smaller lakes"

1. This is how Kenora advertises itself. On which lake is it located? The views in Figure 3-2 and 3-3 tell why people enjoy visiting the Kenora district. Bass, pike, lake trout, and muskellunge, the latter weighing up to 56 pounds, attract fishermen. Deer, moose, bear, duck, and partridge interest the hunters. Some paddle their canoes through the quiet waters while others cruise in commercial vessels. Water enthusiasts ski, sail, or swim. Hikers tramp through the bush and admire the numerous waterfalls and lakes. Some vacationers just enjoy relaxing in a lovely setting.

2. Kenora has 11,295 residents and advertises 56 resorts, 49 sets of housekeeping cabins, 15 motels, and 4 hotels. The tourist industry provides

3–1. The vacationlands of Northern Ontario.



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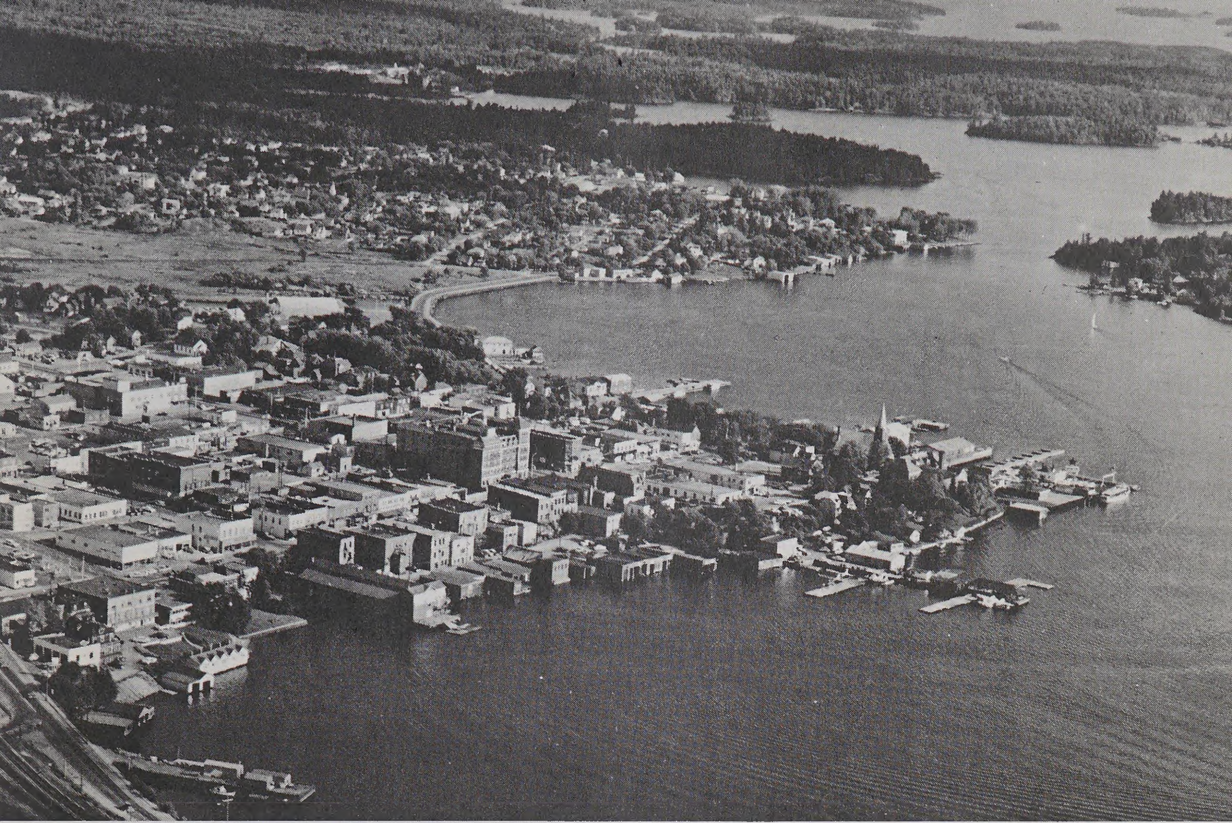

3–2. The town of Kenora from the air.

3–3. Lake country near Kenora (Ontario Department of Travel and Publicity).

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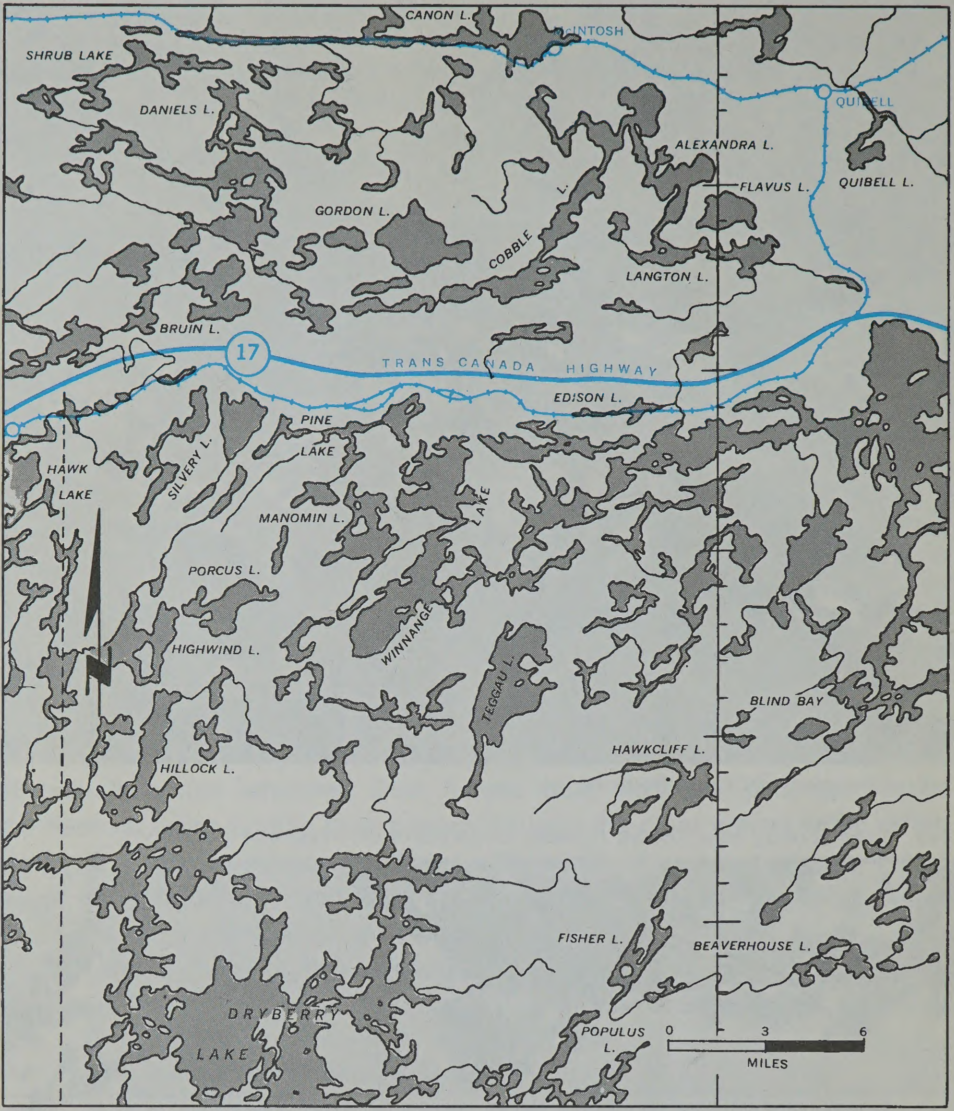

3–4. Some of the lakes and islands in the Kenora section of the Canadian Shield.

jobs for many people. Name some other jobs that are indirectly dependent on tourists. Twelve hundred men are employed in pulp and paper making, which is the chief industry of this area apart from tourism.

3. Figure 3-4 is a large-scale map of the country just outside Kenora. What proportion of this area is water covered? What is the average size of the lakes?

4. How can people reach Kenora? There are thousands of square miles of country like this in the Canadian Shield but most of it is not easily reached by visitors. Why is it difficult and expensive to build roads in this type of country? Kenora is one of the most accessible parts of Northern Ontario, but it is still 1,244 miles from Toronto. This gives some idea of the distances

in Northern Ontario. Kenora looks to Winnipeg rather than Toronto as its large city. How far must the people of Winnipeg travel to Kenora?

Many Canadians have visited Northern Ontario as a vacation area and value it as such, but this region is of great value to Canada for other reasons. Look at Figure 3-5. What fraction of Canadian mineral output comes from Ontario? Ontario is a major world producer of nickel, platinum, copper, gold, iron, and silver. In all Southern Ontario there is only one major mineral development, that of iron ore at Marmora. All other minerals are part of the buried treasure of Northern Ontario.

This area is so vast and so little explored that no one knows how much wealth it contains. Every year thousands of dollars are spent in surveying and prospecting these regions. In 1968 there were 70,779 mining claims in good standing in Ontario and 38,705 mining claims were recorded. Figure 3-6 shows some geologists working in the bush. What are some of the problems of prospecting in the Canadian Shield?

Earning a living 4,000 feet underground*

Every working morning the nickel miners of Falconbridge put on the special clothing required for their job. They wear rubber coats, rubber pants, and rubber boots for they often need protection from water. The boots have steel toes and they wear hard aluminum hats. They also have safety glasses and the hats are fitted with electric lamps.

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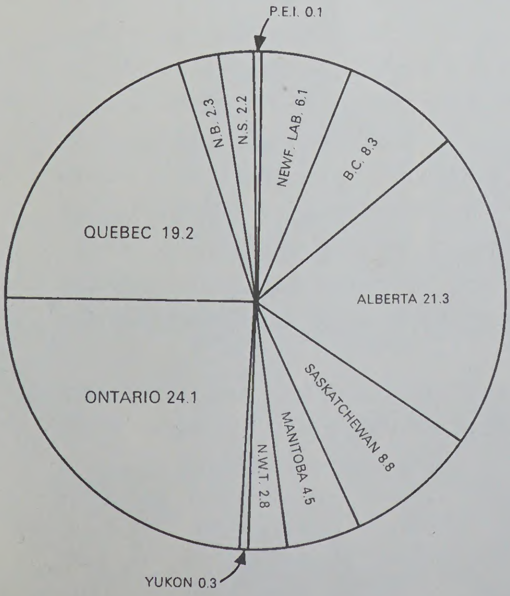
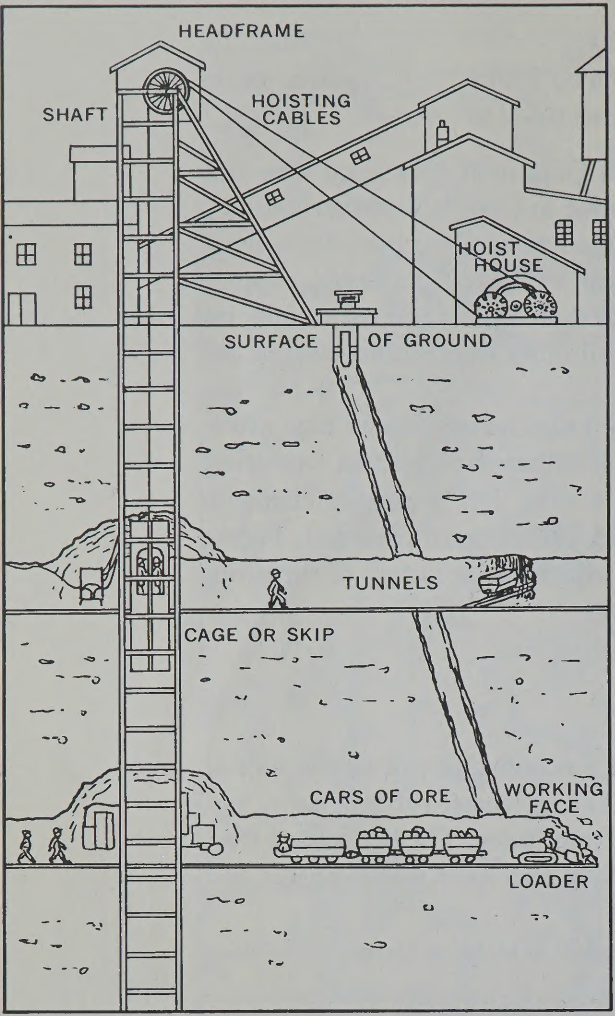
*For material used in this section, the authors are indebted to Mr. J. A. Deyell of the Falconbridge mine.

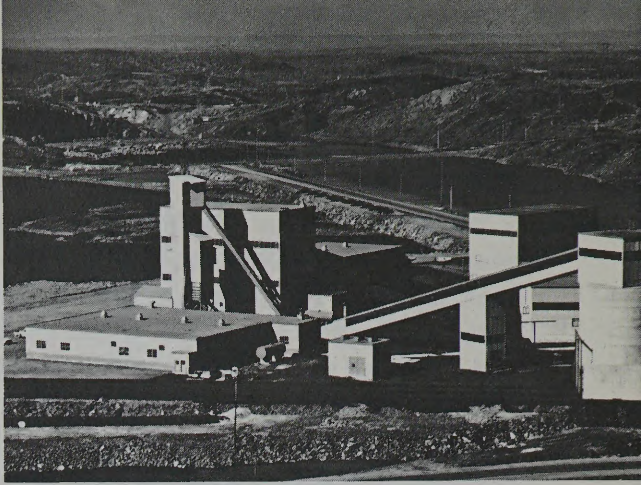
3–5. Percentage of Canadian mineral production by provinces, 1966.



3–6. Geologists working in the bush in Northern Ontario (Ontario Department of Mines).



3–7. A diagram of a shaft mine.



3–8. Surface buildings of a mine near Falconbridge (George Hunter).

3–9. Miners at work (George Hunter).

They reach the underground working areas by a two minute descent in the cage or skip. Figure 3-7 shows how this is really a large elevator which goes deep underground. The cage stops several times as there are many *levels* in the mine rather like the various floors in a large department store. When the miners get out of the cage they walk along tunnels to the working face. Some operate drills to make holes in the rock. Explosives are then put into the holes and the ore is blasted out. Their working partners load it into cars, using a mechanical loader. The ore is a dark grey color with many tiny shining crystals. From this rock, nickel, copper, gold, iron, platinum, cobalt, and small quantities of other precious metals are extracted. After the ore is loaded into the cars, it is taken by rail to the shaft and hoisted to the surface where it is smelted.

Underground installations include crushers, cement mixing plants, and repair shops to service equipment. Pumping stations pump out water when necessary.

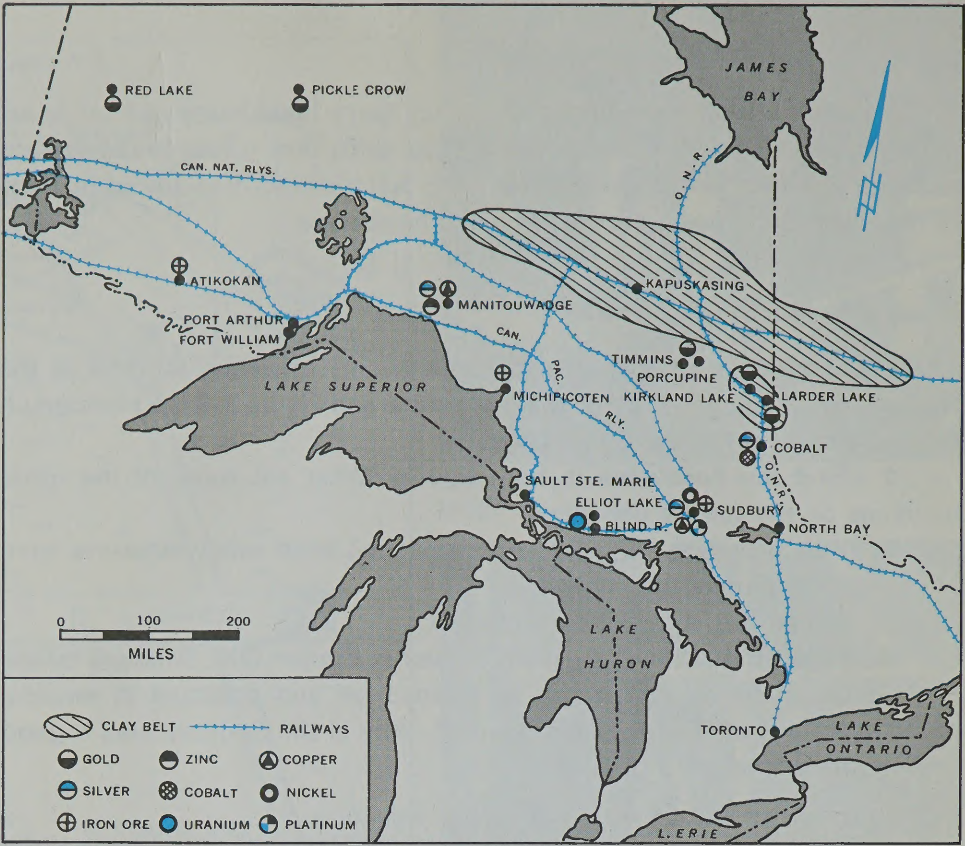
Miners work an eight-hour shift. They carry lunchboxes and eat in an underground lunchroom. At the end of their shift, they return to the surface and take a shower before going home. The first aid station and headquarters of the mine rescue team are also near the headframe.

Mining in Northern Ontario

The Falconbridge mine was one of about twenty operating in 1969 in the Sudbury area. Figure 3-7 is a diagram of a mine and Figure 3-8 is a photograph of a new mine at Copper Cliff nearby.

1. Find the headframe in both figures. What are some of the other buildings on the surface used for?
2. Why is mining a dangerous occupation? What safety measures have been taken to protect the miners?
3. Figure 3-9 shows miners at work.
4. Figure 3-10 shows the great smelter at Copper Cliff. *Smelting* means melting the metal so that it can be drained off and collected in moulds. Great quantities of electricity are required. Why is the Sudbury area a good location for a smelter?

3–10. The huge smelter at Copper Cliff (George Hunter).



3–11. Leading minerals of Northern Ontario.

The Sudbury mines produce more than half of the world's supply of nickel, one third of all copper mined in Canada, and one third of the world's output of platinum. What other metals are also obtained from these complex ores?

The changing landscape of the Sudbury area

For two hundred years the only men to live in the Sudbury area were a few Indians and fur traders who passed through this country as they roamed the forests of the Canadian Shield. Later lumberjacks took wealth from the forest and finally in the mid-nineteenth century prospectors and miners found minerals in the area.

When the railway was built across Northern Ontario, it became easy for people and goods to reach this area from Toronto, Ottawa, and Fort William. Many people arrived in Sudbury to work in the mines and smelters. At first wood was used for fuel and many trees were cut down. Then the poisonous fumes from the smelters destroyed more vegetation. Within a short time the lake and forest country round Sudbury no longer looked like that near Kenora. Bare rock, dead trees, and heaps of waste material covered the landscape and the loss of the forest caused severe soil erosion.

3–12. Open pit iron mining near Atikokan (Ontario Department of Travel and Publicity).

Now efforts are being made to halt this destruction of the forests and soils and to restore the natural beauty of the landscape. Sudbury has developed a tourist industry and about 500 successful farms have been established in the area. They supply a great deal of food for the district.

The Gold Belt

When most of the good farmland in Southern Ontario had been occupied, immigrant farmers began to look for land in Northern Ontario. Long ago, clay soils were laid down on the bed of an ancient lake. After the water drained away the clay was exposed, and it now provides better soil for farming than most of the rocky country of the Shield. Farmers began moving into this area in the middle of the nineteenth century, and it became known as the Clay Belt. Locate it in Figure 3-11. Geographers also call it the Gold Belt, for the immigrants discovered minerals. Gold strikes were made at Porcupine, Kirkland and Larder Lake and this area is still one of the chief gold mining regions of the world. But the supply of ores becomes less each year and costs increase, and if demand for gold declines there are few jobs in these towns. Because of this, such cities as Timmins are trying to attract new industries.

Imagine that you have been hired to make a pamphlet to attract industry to Timmins. What advantages would you list? Raw materials, power, labor, construction costs, transportation, and living conditions in the area will influence industrialists in locating their plants.

Shovelling iron ore from an old lake bed

Figure 3-12 is a picture of the greatest iron ore producer in Northern Ontario. This is an *open pit mine* at Atikokan and the trucks are loading ore

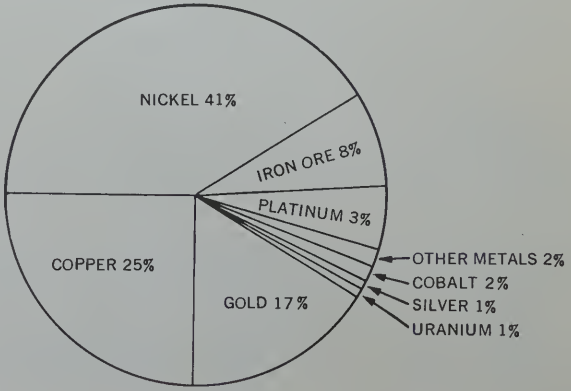
3-13. Boom town or ghost town?—A shopping plaza at Elliot Lake (Ontario Department of Travel and Publicity).

which is shovelled up from the ground. What advantages does this method have over shaft type mining such as that at Falconbridge? Why does climate affect open pit mining? These trucks are working on the bed of an old lake which had to be pumped dry before work could begin. Locate Atikokan in Figure 3-11. The ore is transported by rail to Port Arthur and then taken by "laker" to Hamilton and various United States steel centres. Where else is iron obtained in Northern Ontario?

Modern mining communities such as Atikokan, and Manitouwadge where a new copper mine has opened, are not "shack towns" such as we associate with earlier mining booms. The townsites look like any suburban area in Canada with neat homes, shopping centres, and community facilities.

When uranium was discovered at Elliot Lake, increasing demand was foreseen with the beginning of the "Atomic Age". A permanent town with elaborate facilities was built. Figure 3-13 shows part of the new town. People poured in, and during the boom period a single dwelling sometimes housed six families. Suddenly the demand for uranium dropped. Once the mines closed, there was no other work in Elliot Lake. Of 25,000 residents in 1959

3–14. Percentage of Ontario's total metal production by value accounted for by each metal named.



less than half remained in 1960. The story of "boom town to ghost town" is an old one in mining areas. Elliot Lake is trying to attract other industries. If other work cannot be found for the people, this may become one of the biggest ghost towns ever seen.

A review of mining in Northern Ontario

1. Name one place in Northern Ontario where each of the metals named in Figure 3-14 is mined.
2. Which is the most important metal by value?
3. What is the difference between underground and open pit mining? Name one place and one mineral where each method is used.
4. What are the special problems faced by mining towns?

Problems of farming in Northern Ontario

Look back at all the pictures and maps in this study. Why is there very little farming in the Canadian Shield? Most of the area will never become farmland, but small patches of more favored land can be made to produce crops. The scattered patches of farmland are separated by large tracts of bush. This is often called the *pioneer fringe* because farms are being developed for the first time. The vertical aerial photograph in Figure 3-15 shows such a patch of farmland close up against a barren area of the Shield. Even on the farmland there are large patches of country which are not suited for farming. The Clay Belt is the only major area of farmland.

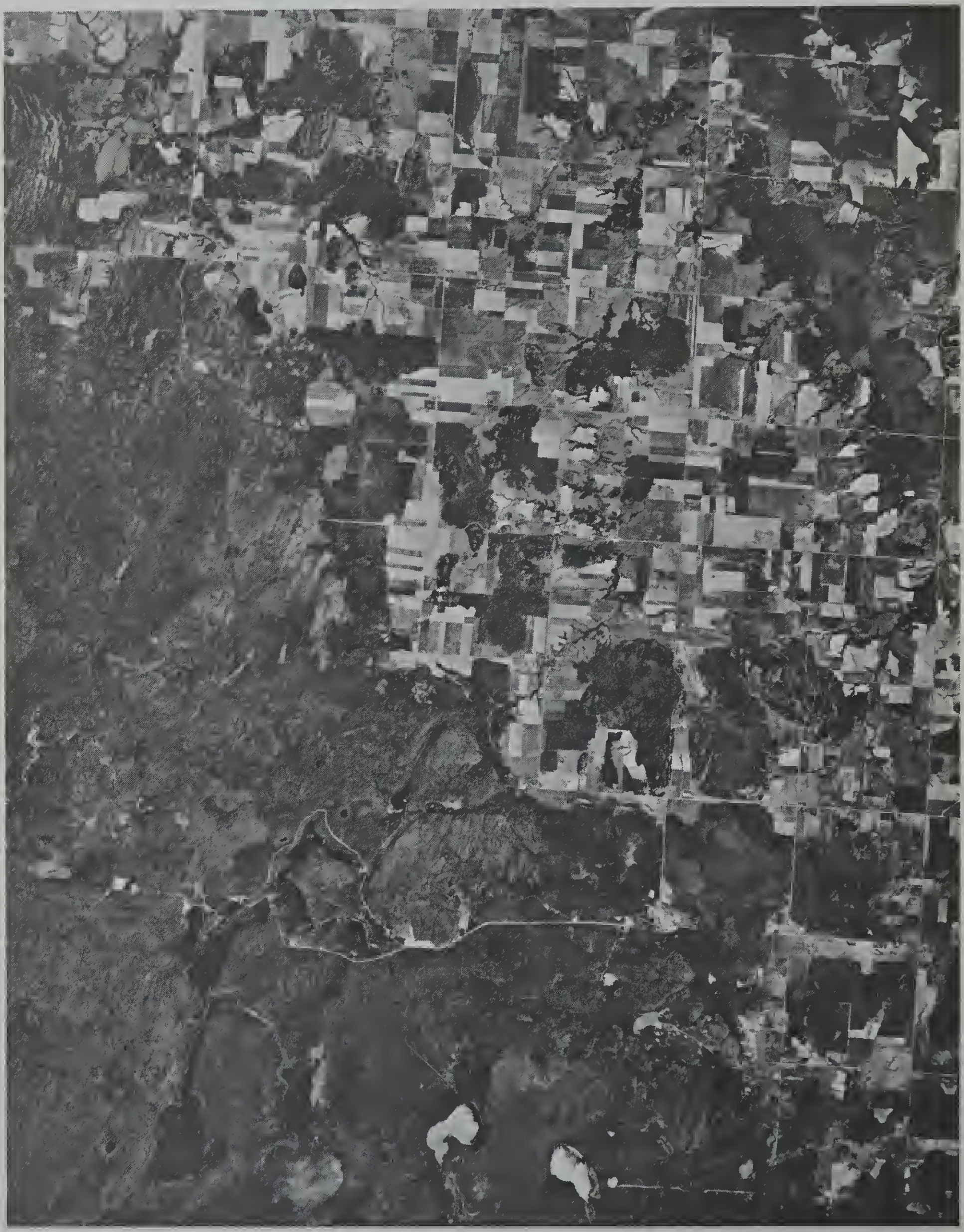
Starting a farm in the Clay Belt

Andy Kolinski came to Ontario in May, 1920. He came as a pioneer farmer and planned to start a farm in the Clay Belt on land that had never before been ploughed. He arrived with his family by train and got off at the small settlement of Kapuskasing shown in Figure 3-11. He chose land as close to the town as possible, for he knew that there was an Experimental Farm there. He hoped that he could get advice from the scientists who were studying the special problems of farming in this area.

He found that heavy forest covered much of his land. However, the trees were quite small and he started immediately to clear them. Some wood was used to build a log house, and the rest was sold to the newly established pulp mill in Kapuskasing. The cash received in payment helped to buy equipment and seed.

It was useless to try to clear some patches of his land, for they were bog or muskeg. There were areas of bare rock, too, so he spent most of his time ploughing up the patches where the soil was fairly deep. Sometimes the work was very hot. Figure 3-16 is a climatic graph for Kapuskasing. What is the July average temperature? Temperatures as high as 101°F. have been recorded here. Sometimes he could work until 9 p.m. before it became dark. Why are the summer days so long at Kapuskasing? What is the precipitation during the summer months? Mr. Kolinski thought it was rather scanty but hoped it would be adequate.

3–15. Farmland in the Clay Belt (R.C.A.F.).



He noticed that by September the nights were very cold. Soon everything was frozen hard and snow lay on the ground. He could no longer plough his land, but he continued to cut the timber and found the work quite pleasant in the cold, sunny weather. He could move his logs out more easily on the snow than he could in summer. Why was this so? How many months have an average temperature below freezing?

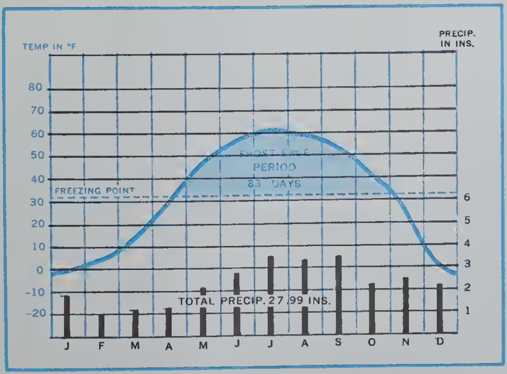
Late in April, Mr. Kolinski began to think about seeding. He worked his land as soon as it dried out after the spring thaw, but realized that the night temperatures were still far too low to permit growth. It was early in June before he planted his oats and potatoes. He hoped the season would be long enough for him to harvest them before the first frosts in the fall. He was happy to find that the long hours of daylight helped the grain to ripen, and that the cool evening temperatures kept the rate of evaporation down so that the rainfall was adequate. He was disappointed in the low yield of his crop, however. Later he discovered that his soil was acidic and that by using large quantities of fertilizer he could get a better crop.

Mr. Kolinski battled on. Sometimes a late frost, once as late as June 8th, damaged his whole crop. He gave up some of his fields because the poor drainage made cultivation too difficult. But as came he to know his own farm better, and as the Experimental Farm discovered more about the agricultural possibilities of the area, he gradually established a thriving farm.

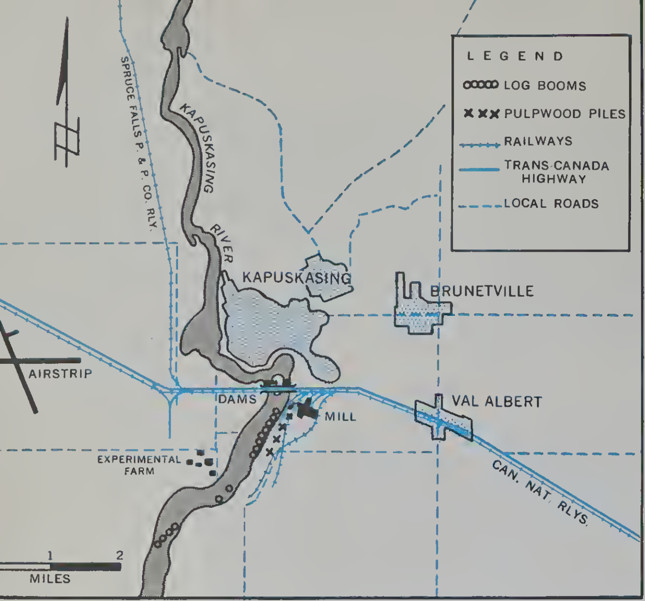
He grows hay, oats, and potatoes. Beef cattle are his main source of income. Why does he need to grow so much feed for them? He fattens them in the long summer days and sells many of them in the fall. He sells some dairy produce locally and still sells pulpwood from his woodlot to the mill in Kapuskasing. This is his chief winter occupation.

A summary of farming in the Clay Belt

1. Describe the climate in the Clay Belt. What are the main problems for the farmer?



3–16. Climatic graph of Kapuskasing.



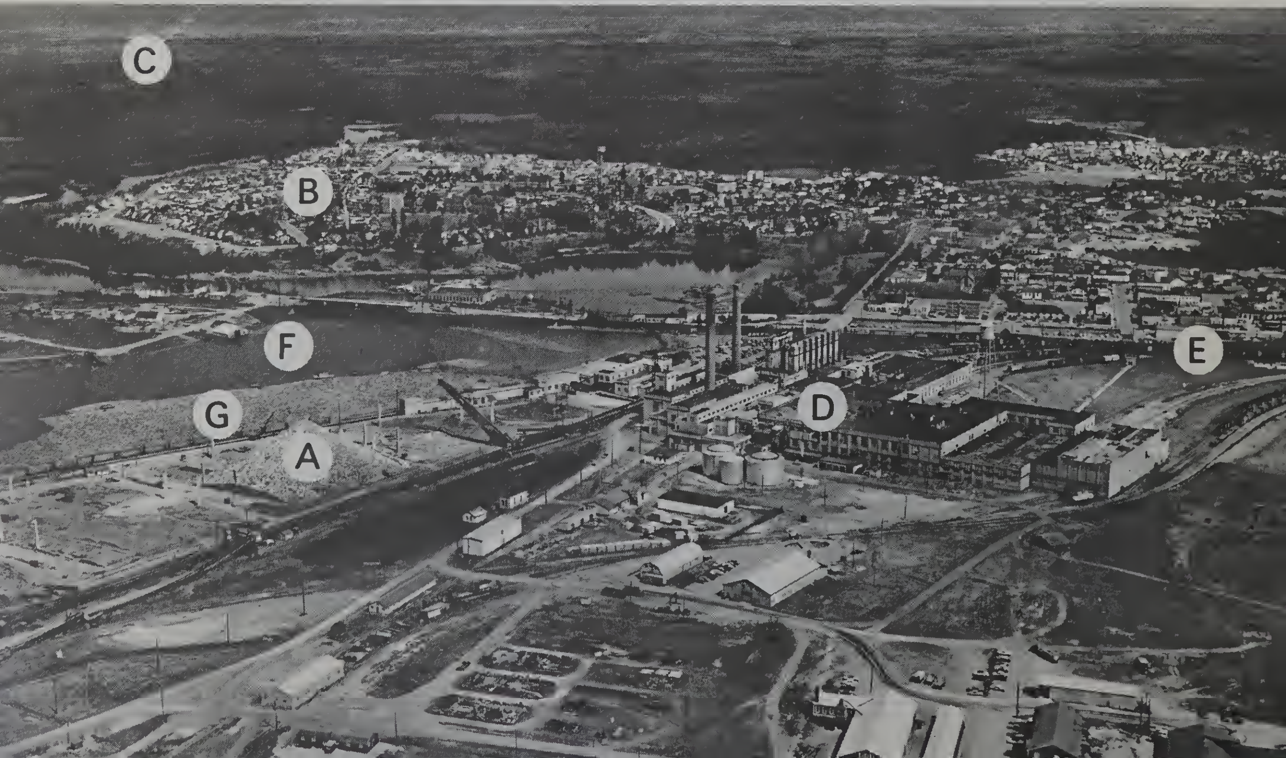
3–17. A map of Kapuskasing.

3–18. Felling a tree in Northern Ontario (Ontario Department of Lands and Forests).

2. What other problems make farming difficult? How have some of them been overcome?
3. Why is the fattening of beef cattle the most profitable form of farming?
4. How does the farmer increase his income by non-agricultural work?

The Kapuskasing area is one of the most productive farmlands in the Shield. In most other parts, conditions are so much more difficult that farming is almost impossible.

3–19. Aerial photograph of Kapuskasing (Ontario Department of Travel and Publicity).



Forest industries at Kapuskasing

The map in Figure 3-17 and the photograph of the town in Figure 3-19 show how a large pulp and paper centre is run.

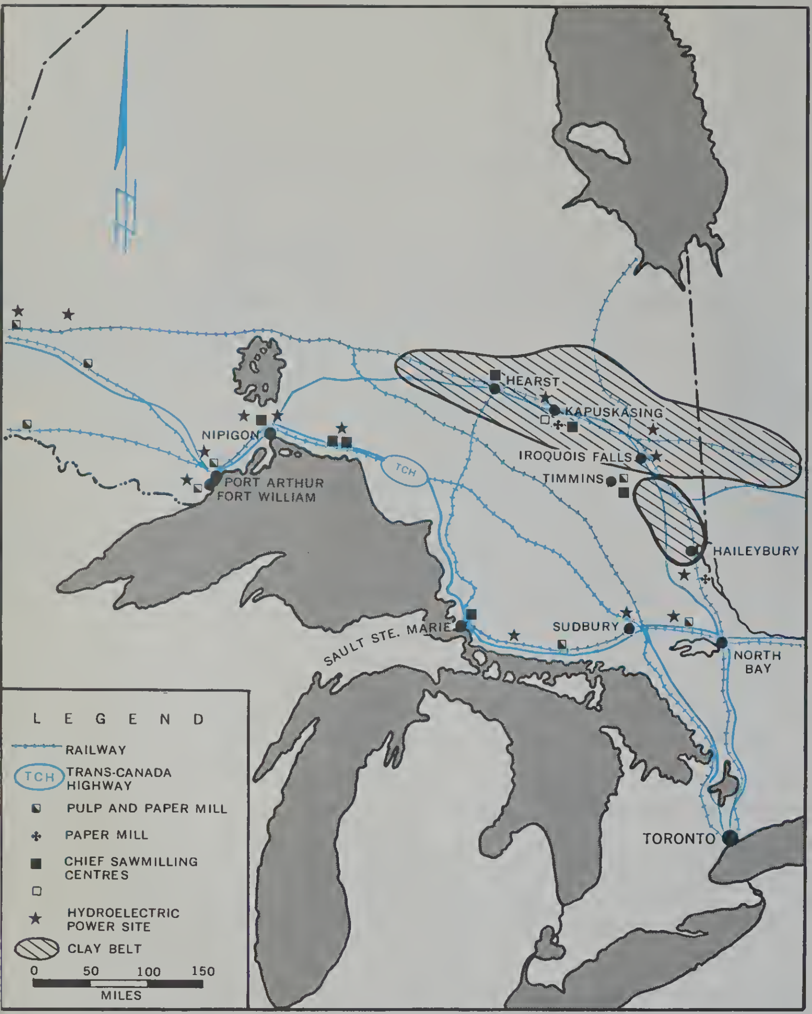
1. Which letter labels the forests surrounding the town? Figure 3-18 shows a lumberjack felling a tree. Comment on the size and type of trees. What season is this? What was the weather like on this particular day? Twice as many men are employed in the woods in winter as in summer. They live in modern camps which are famous for their good food. The company doctor visits each camp weekly to attend to any sick or injured workmen. Why is tree felling more easily carried on at this season? The logs are transported by truck and rail. Who owns the railway north into the woods from the mill? Why are there no regular passenger trains in this area? South of Kapuskasing the wood is piled on the ice and in spring it moves downstream to the mill. Which letter marks the log booms in Figure 3-19? Why are logs not moved by water from the north? From what other source does the mill obtain logs?
2. A great deal of water is needed in pulp and paper making. The bark is removed by water pressure, the pulpwood is "cooked" in steam, and more water is used to dilute the pulp and finally to clean it before the paper-making stage. Where does the mill obtain all its water?
3. The mill needs large quantities of cheap hydro-electricity. The stone grinders used to crush the logs into pulp use 120 times as much as is needed by the whole population of the town. Plenty of power is available from several sites on the Kapuskasing River.
4. All pulp and paper is shipped out by rail. A train load of more than 40 cars leaves Kapuskasing every day for various parts of Canada and the United States. Which letter shows the freight cars loading? In most years newsprint is Canada's chief export. What other important means of communication are available to the people of Kapuskasing?
5. Which letter marks the Kapuskasing River? Why is it very important to the pulp and paper industry?

There are many mills similar to that at Kapuskasing. Locate them in Figure 3-20. Large areas of softwood forest and plenty of hydro-electricity are the chief factors which have made Northern Ontario one of the world's great producers of pulp and paper.

Forest conservation

If the forest cover is removed from an area it may take 80 years to reseed itself. During this time it is useless for lumbering and may cause problems with the local water supply, plants, and animals. To ensure that healthy

3–21 (Above). Fire destroys valuable forest in Northern Ontario (Ontario Department of Lands and Forests).



3–20. Forest industries, main roads, and railway routes of Northern Ontario.

forests are maintained, the government issues licenses in order to control cutting. If only those trees of the proper age, size, and quality are cut, the forests can produce a timber crop every year. In the forest nursery at Kapuskasing healthy young trees are grown from seed. They are then transplanted on cutover land to help restore the forests. Research is being carried on, in an attempt to make trees more resistant to insects and diseases, and to try to make them grow faster. Most attention is given to reducing losses by fire. Figure 3-21 shows a forest fire raging in Northern Ontario. These ruin millions of dollars worth of forest. Plants, animals, and sometimes homes are destroyed. In an attempt to combat this, the Ontario Government employs 2,000 men as firefighters each summer and maintains 300 lookout towers and 27 air bases. Since most fires are started by careless campers and smokers, advertising campaigns try hard to educate people in the need for extreme care in the woods.

The forests are a valuable resource of Northern Ontario, yet less than half the region is productive forest. Large areas are covered by water, swamp,

3–22 (Opposite). There is no sign of human habitation anywhere in this view of part of Northern Ontario (R.C.A.F.).

bog, bare rock, or scrubby woodland of no commercial value. Northward the trees gradually thin out until the tundra region is reached. To those who fly over this land the pockets of farmland, the mining centres, the forest communities, the power plants, and tourist resorts are but tiny specks in a vast wasteland of rock, trees, and water. Figure 3-22 is a scene which is duplicated for thousands of square miles.

How has glaciation affected the character of Northern Ontario?

Review all the photographs of the physical features of Northern Ontario in this chapter. What are the outstanding characteristics of this region?

All this land was once covered by a huge ice sheet. As the glaciers moved over the area, the gravel and rocks embedded in the ice had a sandpapering effect on the surface over which they passed. Soil was removed and the rock surfaces were smoothed into gently rounded outlines. When jagged rocks were dragged over the surface, deep scratches or *striations* were made in the bedrock. Frequently, the ice gouged out hollows of all shapes and sizes. This removal of material by the ice is known as *glacial erosion.*

A change in the climate caused the glaciers to melt back or *retreat.* Sometimes material was dumped by the ice. Moraines, drumlins, and other drift deposits are widely scattered across Northern Ontario. Lakes formed where valleys were dammed by drift deposits. Meltwater filled the many gouges left in the bedrock and formed thousands of other irregularly shaped lakes. There were many falls and rapids along the rivers, which twisted and turned to find new channels through the irregular surface left behind by the ice.

Where have clays deposited in a former lake been exposed to form good farmland? Many lakes remain, however, and, together with waterfalls and irregular drainage patterns, remind us that a huge ice sheet once covered this area.

Review Figures 3-2, 3-8, and 3-22 and record the characteristics of the landscape of Northern Ontario that can be traced to the work of the glaciers.

1. *Agriculture.* How has glacial erosion contributed to the difficulties of farming in the Canadian Shield?
2. *Industry.* How does the type of drainage established after the retreat of the ice assist in the production of hydro-electricity? Volume, swiftness of flow, gradient, dam sites, and storage capacity are all important considerations in establishing hydro-electric plants.
3. *Recreation.* Why is glaciated Shield country attractive to tourists?
4. *Transportation.* Why is the glaciated area of the Canadian Shield a difficult place to build roads and railways?

5. Copy the following list of the features of glaciation found in Northern Ontario. Beside each one note how it has influenced the development of the region. An example is given for item 1.

Feature	*Significance to development of area*
1. Swift streams, rapids and waterfalls	Potential hydro-electric power. Scenic — attracts tourists. Obstacles to navigation.
2. Many lakes	
3. Poorly drained hollows and swamps, confused drainage pattern	
4. Little soil, much bare rock	
5. Even skyline, rounded slopes	
6. Sand, clay, and gravel deposits	

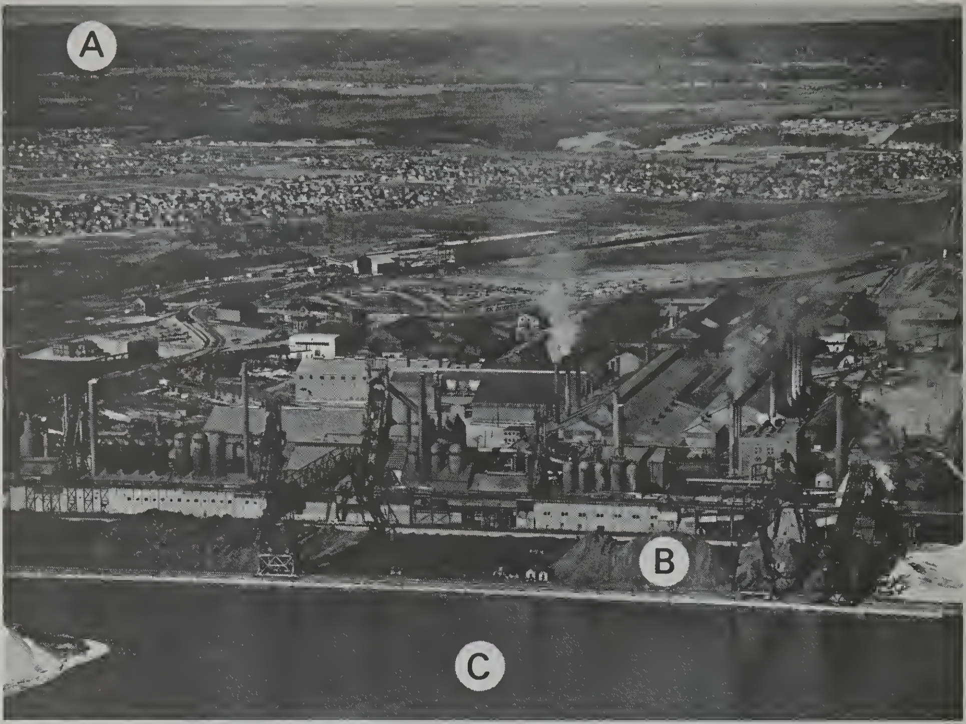
The transition zone of the Near North

Dairy farms do not suddenly disappear to be replaced by forested lakeland along the line where we divide Northern from Southern Ontario on our maps. There is a *transition zone* in which we may see features from both the neighboring regions. Such a zone exists right across Ontario westward from Ottawa to the Great Lakes. More than one third of the population of Northern Ontario lives in this strip of lowland. Figure 3-27 on page 24 shows part of this area where it meets the agricultural lands of Southern Ontario.

1. How do the vegetation, the amount of surface water, and the shapes and sizes of the lakes suggest that this area is part of the Canadian Shield?

2. How can you tell that far more people live in this area than in the huge areas further north, such as that shown in Figure 3-22? How does the map suggest that some of them make a living?

3. How many railways are shown? There are also many roads into this country. Why do many people from Southern Ontario visit this area? Quite extensive farmlands, several large industrial towns, and good communications with the south remind us of Southern Ontario, but the great forests, numerous lakes, sawmills, and hydro-electric power projects are unlike that landscape.



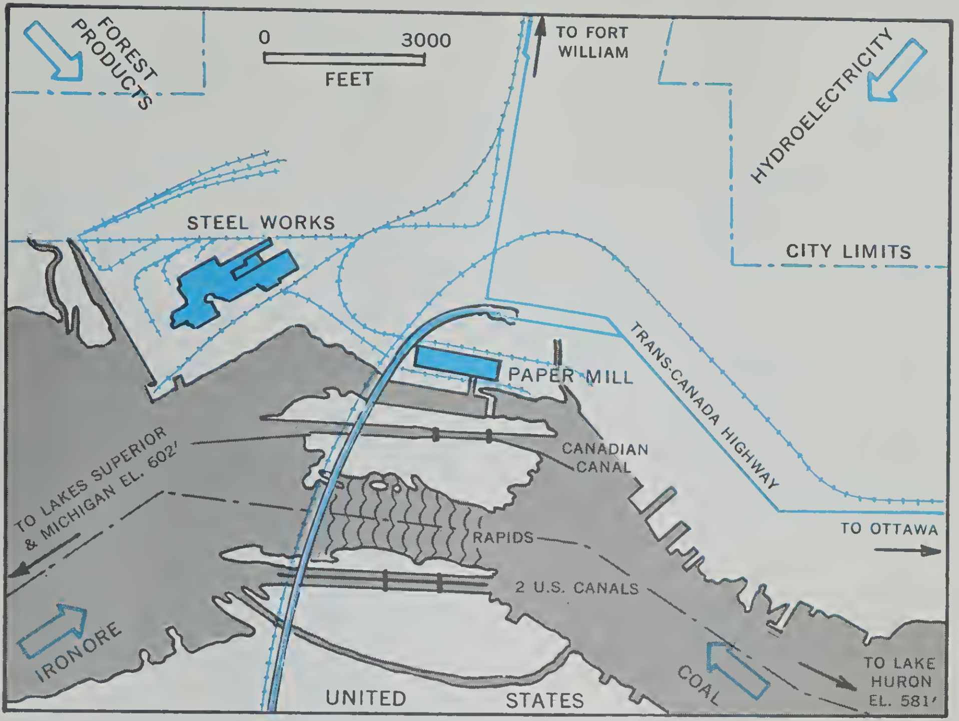
3–23. A view of the steelworks at Sault Ste. Marie (George Hunter).

The Gateway to the North — North Bay

The voyageurs who paddled so vigorously up the Ottawa River soon found themselves passing through Lake Nipissing past the site of the present city of North Bay. The canoe route followed this course westward to the Great Lakes. This is still an important east-west route. Look back at Figure 3-20. What forms of transportation use it today ? When the mines and forests of the Shield began to open up, many settlers were attracted. North Bay was chosen as the southern terminus of the Ontario Northland Railway, and it soon became the major crossroads of Northern Ontario. Locate all the rail and road routes that meet at North Bay in Figure 3-20. It is an important distributing centre and transportation provides a large number of jobs. Good communications, cheap hydro-electricity, natural gas, and forest resources make the area attractive to a variety of industries. Explosives, insulating materials, and sawn lumber are the chief products. A major air force base brings many people to the area, and a thriving tourist industry attracts many visitors.

Sault Ste. Marie — Ontario's second iron and steel centre

1. Figure 3-23 is a view of the steel works at Sault Ste. Marie. In what ways is it similar to Hamilton? Iron ore and coal are brought in by boat.



3–24. A sketch map of Sault Ste. Marie.

2. What other major industry is shown in Figure 3-24? What advantages does Sault Ste. Marie have as a site for a pulp and paper mill?

3. Why are canals necessary at Sault Ste. Marie? In a typical year these canals carry more traffic than Suez and Panama combined. Under the two headings "Eastbound" and "Westbound," list some of the cargoes carried.

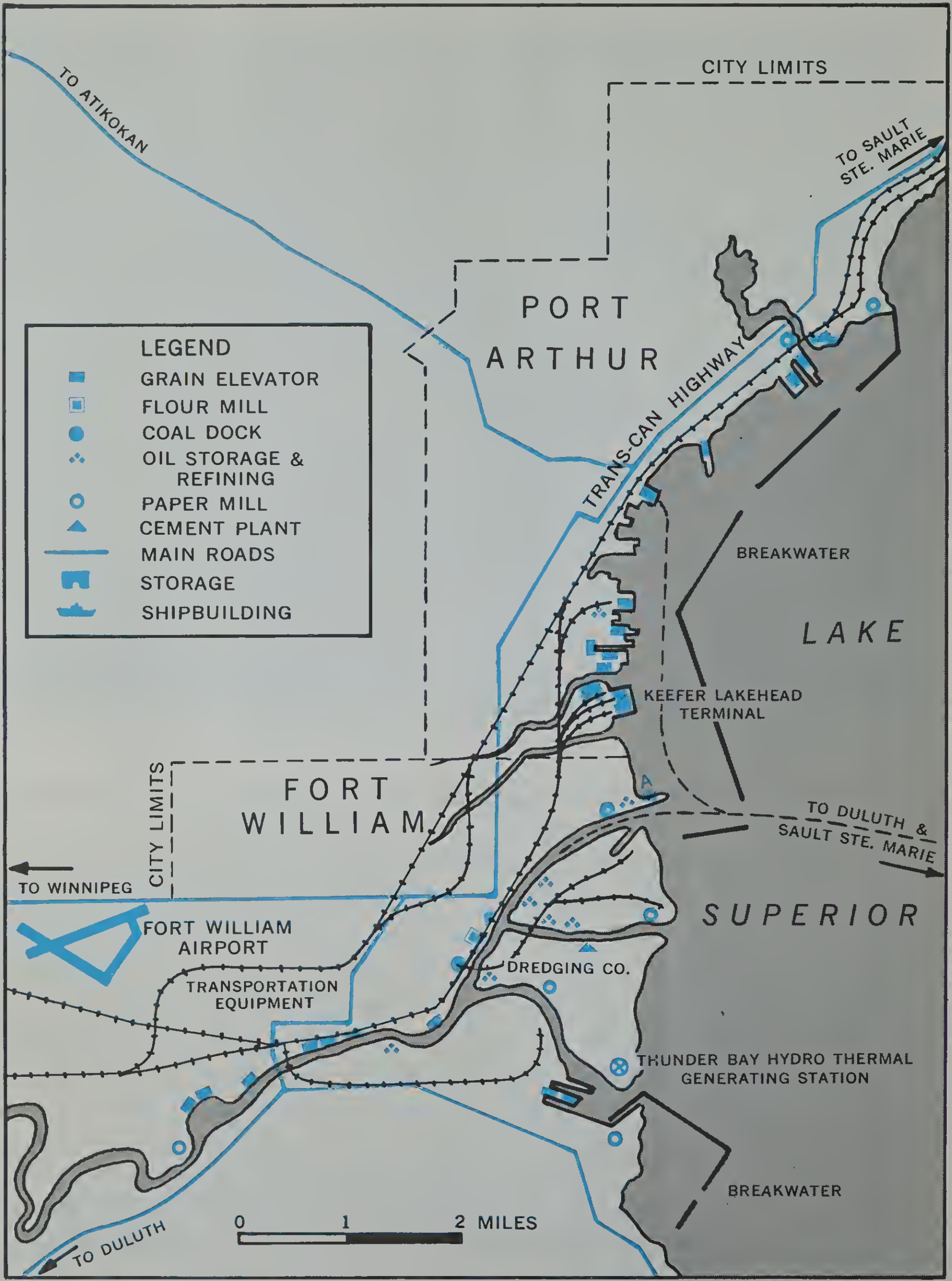
4. Many travellers to western Canada cross into the United States at this point. Estimate how much mileage is saved by not going by the all-Canadian route north of Lake Superior. Sault Ste. Marie is a major road and rail centre. It has all the functions of a border crossing point. Which cities in Southern Ontario does it resemble in this?

5. In Figure 3-23 what resource is indicated by each letter?

Imagine you are on the bridge of the *Meadow Queen* as she passes through Sault Ste. Marie. Describe some of the interesting things you see and hear on this exciting trip.

The *Meadow Queen* arrives at the Lakehead

It happened to be a calm day when the *Meadow Queen* steamed into Thunder Bay Harbor, but it is not always thus. How does the map in Figure 3-25 suggest that severe storms sometimes occur on Lake Superior? How do you



3–25. A large-scale map of the port of Thunder Bay (formerly Port Arthur and Fort William).

know that the channel must sometimes be dredged to keep it free from silt? The boat was to pick up a cargo of wheat from the elevator marked A on Figures 3-25 and 3-26. Find the opening in the breakwater through which it entered the harbor. Find the freight cars which bring wheat from the Prairies to the elevators at Thunder Bay. Count how many elevators there are in the Lakehead port of Thunder Bay.

Shore leave — a closer look at the ports

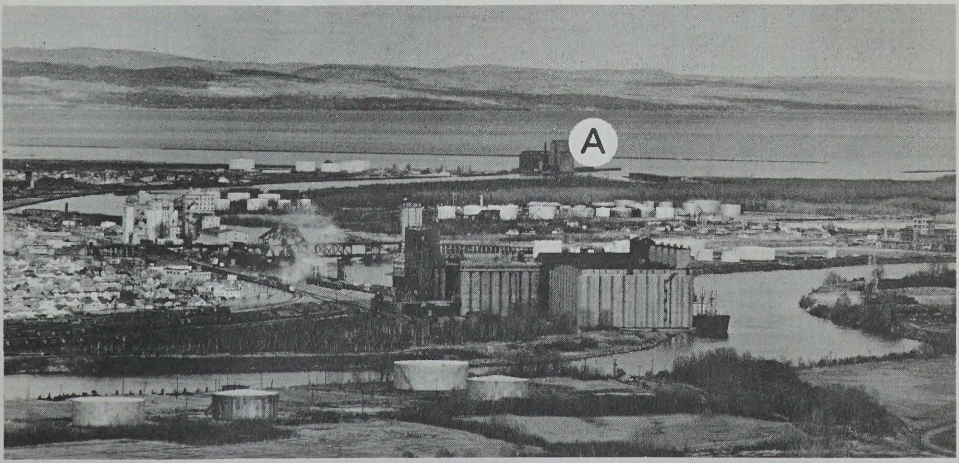
While the *Meadow Queen* is at the dock the crew may go ashore when off duty. The map and photograph show what these towns are like.

1. Name two important industries located next door to the elevator where the *Meadow Queen* is loading. Why is this a good site for a paper mill?
2. Make a list of the other industries of the area.
3. What power is available? In addition to the sources noted on the map, natural gas is brought by pipeline from Alberta.
4. The second most important cargo handled by the Lakehead is iron ore. For this a special loading dock has been built. Freight cars of ore run right out along the dock and the material is then dumped into the holds of vessels below. Where does this ore come from? Where will the boats take it?
5. How can you tell that the lakehead ports are an important transportation centre?

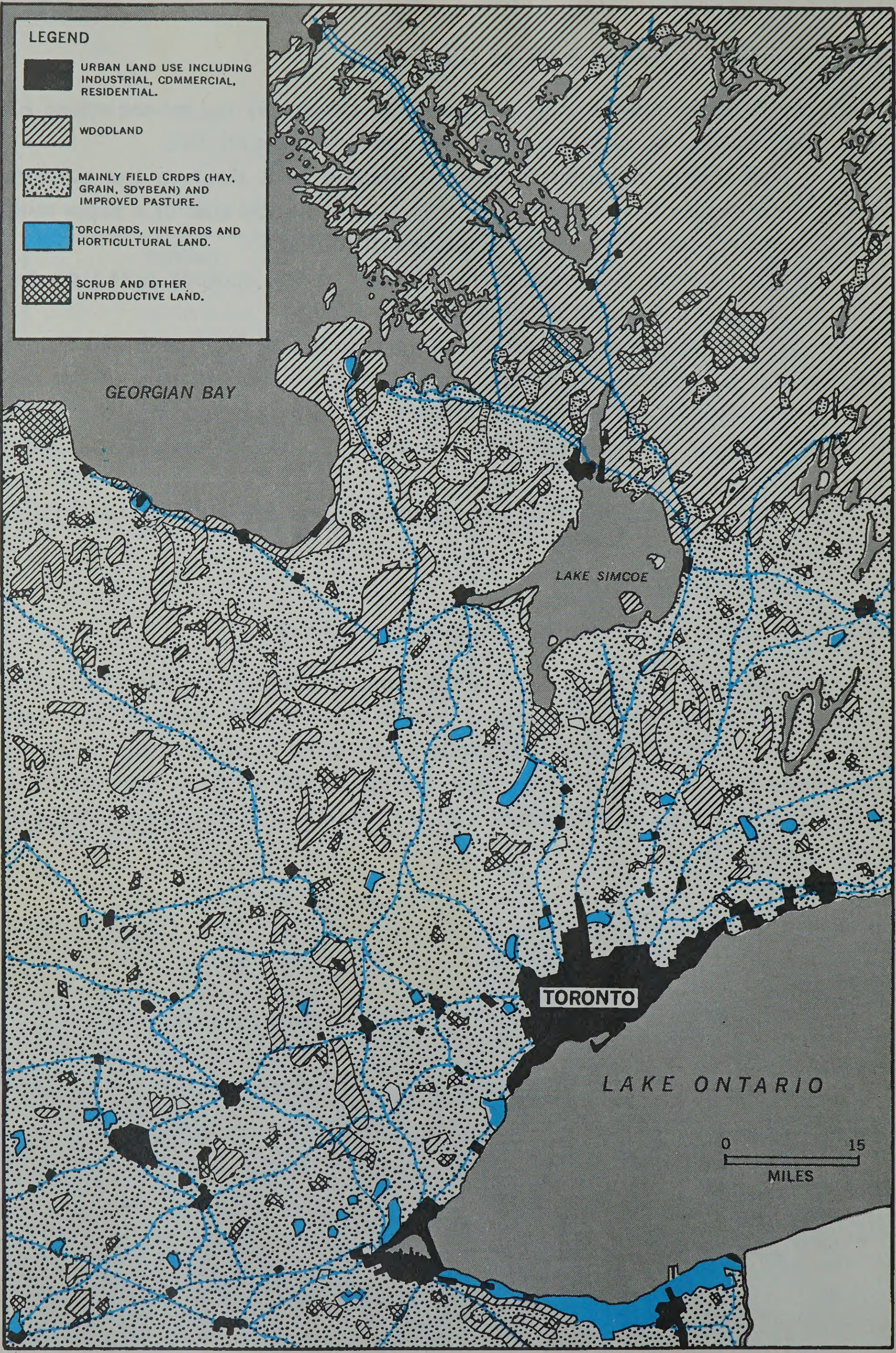
Why is Northern Ontario an important region?

Country like that in Figure 3-22 is a far more common sight in Northern Ontario than anything else we have seen in this chapter. Most of this vast area is completely uninhabited. Travellers who cross it, often complain about the ceaseless monotony of trees, rock, water, and more trees for mile after mile. Yet Northern Ontario makes a major contribution to Canada's wealth. Explain why this is so.

3–26. Part of the harbor at Fort William (Canadian Government Travel Bureau).



3–27. A land-use map of part of Ontario (simplified from the land-use map issued by the Geographical Branch, Department of Mines and Technical Surveys).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▩ URBAN LAND USE INCLUDING INDUSTRIAL, COMMERCIAL, RESIDENTIAL.
▨ WOODLAND
▒ MAINLY FIELD CROPS (HAY, GRAIN, SOYBEAN) AND IMPROVED PASTURE.
🟦 ORCHARDS, VINEYARDS AND HORTICULTURAL LAND.
▦ SCRUB AND OTHER UNPRODUCTIVE LAND.
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LAKE SIMCOE
TORONTO
LAKE ONTARIO
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